

REMARKS

Applicants request favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 1, 3-11 and 16-25 are presented for consideration. Claims 1, 17 and 22 are independent. Claim 2 has been canceled without prejudice or disclaimer. Claims 1, 17 and 22 have been amended to clarify features of the subject invention, while claims 23-25 have been added to recite additional features of the subject invention. Support for these changes and claims can be found in the original application, as filed. Therefore, no new matter has been added.

Applicants requests favorable reconsideration and withdrawal of the rejections set forth in the above-noted Office Action.

Claims 1-8, 10, 11 and 16-22 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,266,133 to Osakabe in view of U.S. Patent No. 6,133,981 to Semba and further in view of Japanese patent document number JP-5-210049A to Aoki. Claim 9 was rejected under 35 U.S.C. § 103 as being unpatentable over the Osakabe patent in view of the Semba patent, and the Aoki document, and further in view of U.S. Patent No. 6,356,338 to Arakawa. Applicants submit that the cited art, whether taken individually or in combination, does not teach many features of the present invention as previously recited in independent claims 1, 17 and 22. Therefore, these rejections are respectfully traversed. Nevertheless, Applicants submit that independent claims 1, 17 and 22, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 1 recites an exposure apparatus having an illuminating optics unit for irradiating a reticle, on which a predetermined pattern has been formed, with exposing light emitted from an exposure light source, a reticle stage on which the reticle is placed, a projection optics unit for projecting the predetermined pattern of the reticle onto a substrate, and a substrate stage on which the substrate is placed. The apparatus includes at least one chamber for internally accommodating the illuminating optics unit, the reticle stage, the projection optics unit and the substrate stage, a first pressure control device for making a value of pressure inside the at least one chamber higher than a value of pressure outside the at least one chamber, and a first correction device for correcting optical characteristics of the projection optics unit, by performing at least one of (i) moving an adjustment unit while controlling the value of pressure inside the at least one chamber based on the value controlled by the first pressure control device, for adjusting the optical characteristics of the projection optics unit and (ii) shifting a wavelength of the exposing light while controlling the value of pressure inside the at least one chamber, in accordance with the value of the pressure inside the at least one chamber.

In another aspect of the present invention, independent claim 17 recites an exposure apparatus including an illumination optical system for illuminating a pattern formed on a reticle with light emitted from a light source, a projection optical system for projecting the pattern onto a substrate, a chamber for surrounding the projection optical system, wherein a value of pressure inside of the chamber is set to be higher than a value of pressure outside of the chamber, a pressure sensor to measure the value of pressure inside of the chamber, and an adjusting device for performing at least one of (i) moving an adjusting unit disposed in the projection optical

system while controlling the value of pressure inside of the chamber based on the measured value of inside pressure and (ii) shifting a wavelength of the light emitted from the light source while controlling the value of pressure inside of the chamber based on the measured value of inside pressure.

In yet another aspect of the present invention, independent claim 22 recites a method of manufacturing a semiconductor device including the steps of exposing a substrate by using an exposure apparatus, and developing the exposed substrate. The exposure apparatus includes an illumination optical system for illuminating a pattern formed on a reticle with light emitted from a light source, a projection optical system for projecting the pattern onto a substrate, a chamber for surrounding the projection optical system, wherein a value of pressure inside of the chamber is set to be higher than a value of pressure outside of the chamber, a pressure sensor to measure the value of pressure inside of the chamber, and an adjusting device for performing at least one of (i) moving an adjusting unit disposed in the projection optical system while controlling the value of pressure inside of the chamber based on the measured value of inside pressure and (ii) shifting a wavelength of the light emitted from the light source while controlling the value of pressure inside of the chamber based on the measured value of inside pressure.

Applicants submit that the cited art does not teach or suggest such features of the present invention, as recited in independent claims 1, 17 and 22.

The Osakabe patent discloses technology for transporting an apparatus safely without being dependent on a change in environmental conditions, such as temperature or pressure, at the time of transportation. The apparatus includes an exposure apparatus which is disposed inside an

enclosure. A pressure absorber adjusts the differential pressure between the inside and the outside of the enclosure, in order to maintain a gas-tight environment formed inside the enclosure.

The Semba patent discloses a processing system provided with an apparatus that performs thermal processing, for example, to a wafer. In order to prevent an atmosphere of the processing system from flowing into the connected exposure apparatus, the system maintains the inside pressure of the exposure apparatus to be higher than a pressure of a coating unit or a pressure of a developing unit.

The Aoki document discloses an exposure unit that sets up a mixture ratio of helium and nitrogen gas, which is supplied to a projection optics unit, based on an output from an environmental sensor 21, which detects the temperature and pressure in the exposure apparatus. The pressure sensor is formed in the projection optical system and the temperature sensor is formed in the projection optics unit.

The Arakawa patent discloses a load lock chamber as a subsystem for exhausting a gas-like chemical substance in a section in which an exposure apparatus and a coating/developing system connect.

Applicants submit, however, that the cited art, whether taken individually or in combination, does not teach or suggest the salient features of the present invention, as recited in the independent claims, such as performing moving of an adjustment unit or shifting of a wavelength of an exposing unit while controlling the value of pressure inside at least one chamber. Thus, that art does not teach or suggest the advantage provided by the present

invention of making it possible to attain a highly precise exposure performance even in a case in which the external pressure is changed.

In this regard, if the art were so combined in the manner set forth in the above-noted Office Action, for example, the mixture ratio of the helium and nitrogen gas may be set up according to a change in environmental conditions or the high inside pressure of an exposure apparatus may be maintained according to a change in environmental conditions. Although a combination of the cited art may disclose that inside conditions of a chamber are changed according to a change in environmental conditions, Applicants submit that such a combination would not teach or suggest performing moving of an adjustment unit or shifting of a wavelength of exposing light, while controlling the value of pressure inside at least one chamber, in the manner of the present invention recited in the independent claims.

For the foregoing reasons, Applicants submit that the present invention, as recited in independent claims 1, 17 and 22, is patentably defined over the cited art.

Dependent claims 3-11, 16, 18-21 and 23-25 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

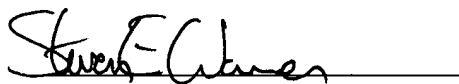
Applicants further submit that this Amendment After Final Rejection clearly places this application in condition for allowance. This Amendment was not earlier presented because Applicants believed that the prior Amendment placed the application in condition for allowance.

Accordingly, entry of the instant Amendment, as an earnest attempt to advance prosecution and reduce the number of issues, is requested under 37 CFR 1.116.

Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and an early Notice of Allowance are also requested.

Applicants' attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Steven E. Warner", is written over a horizontal line.

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